Prince Edward Island
Department of the Environment

1991 ANNUAL REPORT

Gilbert R. Clements
Minister

Rory Francis
Deputy Minister

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The Honorable Marion Reid
Lieutenant Governor
Province of Prince Edward Island

May It Please Your Honour:

I have the honour to submit herewith the Annual Report of the Department of the Environment for the period January 1 to December 31, 1991.

Your obedient servant,

Gilbert R. Clements

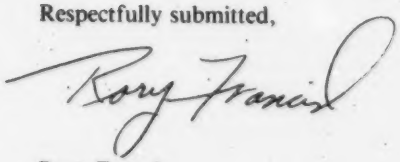
Gilbert R. Clements
Minister

The Honorable Gilbert R. Clements
Minister
Department of the Environment
Province of Prince Edward Island

Sir:

It is my pleasure and honor to submit to you the Annual Report of the Department of the Environment for the year ended December 31, 1991.

Respectfully submitted,



Rory Francis
Deputy Minister

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PLANNING AND ADMINISTRATION BRANCH

The Planning and Administration Branch is responsible for coordinating the Department's strategic planning and for its financial and personnel management. Key duties include the administration of programs under the P.E.I. Conservation Strategy, secretarial support for various advisory groups and the provision of public information about the departmental activities. An important function of the Branch is to coordinate the environmental impact assessment process.

Environmental Impact Assessment

The environmental impact assessment process provides an effective planning tool for predicting the potential environmental consequences of likely environmental implications, before commitment to proceed with those plans are made.

While the legislative authority requiring environmental impact assessment is provided for in Section 9 of the Environmental Protection Act, interim guidelines in the form of a policy are used to assist developers and ensure compliance with the Act.

In addition to establishing steps and procedures, the interim guidelines provide a list of development classifications considered to be undertakings which require written approval by the Minister before they can proceed.

During the past year, 24 written proposals were filed. While most were processed and approvals granted, some are still under review and some were withdrawn by the proponent for various reasons. Reviews and discussions were also held on proposals submitted previously. Numerous inquiries from developers, municipal authorities and the public were also received and addressed.

The Federal Environmental Assessment Review (FEARO) process also applies to many of the projects that are reviewed within the provincial process; both levels of government are committed to cooperative efforts in the review process.

Major projects which were issued approvals under the process during the year included the proposal to extract peat from a section of the Miscouche Bog, the Cavendish Farms expansion, and the golf course at Lakeside. The decision to approve the peat extraction project was made following an independent panel review. One major outstanding project still under consideration is the plan for a Wood/Oil Cogeneration Plant. Following public consultation and input, guidelines for an environmental impact study were issued to the proponents and the Terms of Reference for the study were approved. The studies are presently underway.

The assessment section continued its work in the environmental planning area through its participation on various interdepartmental and intergovernmental committees. Committee work included representation on the Fixed Link Environment Committee, as well as representation at several meetings concerning the new federal legislation on environmental impact assessment presently being considered by the federal government.

A summary of the undertakings filed under the assessment process during the year and their status are as follows:

SUMMARY OF UNDERTAKINGS FILED

1991

Undertaking	Date Received	Date Approved	Comments
Peat Moss (Miscouche)	February 27/90	February 20/91	Approved (Panel)
Cavendish Farms Expansion	May 15/90	August 15/91	Approved
Bonshaw Bridge	June 11/90		Under Review
Potato Services Bldg (Kensington)	October 05/90	February 27/91	Approved
O'Leary Hog Operation	January 8/91	February 12/91	Approved
Highway Maintenance Depot	January 15/91	March 18/91	Approved
Morell-St.Peters Golf Course	February 07/91	March 14/91	Approved
Salt Storage Bldg. (Summerside)	February 20/91	April 10/91	Approved
Willowdale Farms	February 20/91	March 14/91	Approved
French Village Development	February 25/91		Additional Info Required
Charlottetown Area Cogeneration	March 14/91		Under Review
Maypoint-Queens Arms Intersection	March 08/91	April 11/91	Approved
Montague Seafoods	April 22/91	April 29/91	Approved
PW100 Test Cell	May 02/91	June 13/91	Approved
Seafood Processing (Anglo)	May 30/91	June 26/91	Approved
Hog Barn (Brackley)	June 07/91	June 13/91	Approved
Montrose Abatoir	June 13/91	August 29/91	Approved
Duck Pond Road	July 11/91	July 22/91	Approved
Hog Barn (Winsloe)	July 30/91	August 01/91	Approved
Fish Fertilizer (Souris)	August 01/91	August 23/91	Approved
Grafton Street East/Riverside Dr.	September 06/91	October 07/91	Approved
Pork Inc. (Kensington)	September 17/91		Withdrawn
Hog Barn (Carleton Siding)	October 15/91	November 12/91	Approved
Hog Barn (Spring Valley)	October 15/91	October 31/91	Approved
Island Seafood Supreme	October 22/91	November 15/91	Approved
Hog Barn (Tignish)	November 18/91	December 03/91	Approved
Saw Mill (Tignish)	December 18/91	December 20/91	Approved

Round Table on Environment and the Economy

The P.E.I. Round Table on Environment and the Economy is chaired by Hon. Gilbert R. Clements and includes representatives from the primary sectors, environmental organizations, nature people, the financial and business sectors as well as local government and the academic community.

The idea behind the Round Table is to bring together a cross-section of interests to discuss the relationship between environment and economy and to advise government on how their objectives can be integrated.

During the past year the Round Table was reconstituted as some members had resigned. The Round Table met four times during the year. Much of the discussion focused on environmental education, sustainable development and the Royal Commission on the Land. The Round Table formed two sub-committees to review position papers which came out of the Royal Commission on the Land. These papers dealt with The Arterial Highway System and The Coastal Area and the sub-committees will be reporting to the whole Round Table early in the new year.

The recommendations of the sub committee on environmental educatien were tabled and approved and sent to the Premier, who in turn forwarded them to the Minister of Education. There was a good discussion on the topic of environmental education between the Round Table and the Minister and Deputy Minister of Education at the December meeting.

Environmental Advisory Council

The role of the Environmental Advisory Council is set out in Section 4 of the Environmental Protection Act. The essential purpose of the Council is to serve as an advisory board to the Minister. The Planning and Administration Branch provides secretariat support to the Council. The Council typically meets on a monthly basis to consider and advise on a broad range of environmental issues. More detailed information regarding the Council's activities for the past year is contained in its Annual Report.

Environmental Coordinating Committee

The Branch also provides secretariat support to the Environmental Coordinating Committee. The mandate for this interdepartmental Committee of Deputy Ministers is described in Section 5 of the Environmental Protection Act. A primary objective is to ensure communication and coordinated planning between provincial government departments in respect of environmental issues. The Committee is chaired by the Deputy Minister of the Department of the Environment. Since it was established in April 1989 by the Lieutenant Governor in Council, the Committee has generally met on a bimonthly basis to discuss and exchange information on a variety of Provincial environmental issues.

Young Environmentalists Program

In 1990 the Department of the Environment initiated the Young Environmentalists Program (YEP), a program designed to educate Island youth about the importance of protecting and enhancing the environment. Students received both theoretical instruction from workshops, lectures, and field trips as well as actual hands on work experience in environmental management - this format continued in 1991.

The Program was designed for high school and university students interested in the environment who would benefit from a wide variety of environmental work experience to help determine career choices.

The Department of the Environment felt there was a need to help communities and environmental organizations with manpower to correct conditions which are degrading our environment or which have the potential to enhance the Island environment.

In May the Department asked all municipal governments and non-government organizations dedicated to conservation and enhancement of our environment to submit proposals for environmental projects which they deemed important. Projects had to provide on-the-job learning opportunities that enhanced the environmental skills and awareness of participants. They were to result in public benefits and not serve private interest and in addition they were to address regional environmental priorities supported by the community.

In early June a non-government advisory committee was established to review project proposals. This committee determined if each project was a real benefit to the community and made recommendations on how to improve them if they did not meet the program criteria.

There were 53 proposals submitted with 3 being turned down. From these submissions a work program was established. The province was broken into six regions: O'Leary, Summerside, Hunter River, Charlottetown, Montague and Souris. Each region operated with a supervisor (university or college student) and five workers who would work on projects in and around their home communities.

The Program operated from July 2nd to August 23rd. The eight field supervisors started on June 27th and participated in a two week training program. During this period the supervisors spent time visiting work sites and meeting sponsors to familiarize themselves with environmental management techniques. They visited all the proposed educational tour sites so they could relate them to the environmental education video that was prepared for them. They also participated in a three day stream enhancement orientation at Riverdale Camp.

Communications Component

The Communications Strategy was fully implemented in 1991. Co-ordination of all public speaking engagements, advertising, media interviews, and press coverage as well as the maintenance of a communications log is the responsibility of the Communications Officer of the Branch. The Communications Strategy also defines guidelines and procedures for the production of departmental publications.

Regional Conferences

The Branch assisted local community advisory boards in Southern Kings and Queens, Evangeline and West Prince, and East Prince with the co-ordination of local environment conferences. Department staff conducted speeches, facilitated workshops and participated in all sessions.

Atlantic Environment Ministers Meeting

The Department hosted a meeting of the Atlantic Environment Ministers in August, 1991 at the Mill River Resort in Woodstock, P.E.I. The Planning and Administration Branch was responsible for organizing the meeting, press conference and social program.

Environment Week

The Planning and Administration Branch provides clerical support to the Environment Week Co-ordinator; as well the Communications Officer co-chaired the Environment Week Committee along with the Prince Edward Island representative of Environment Canada. The Branch also assisted the Women's Institute with the promotion of their Annual Roadside Clean-up.

P.E.I. Conservation Strategy

The primary goal of the Conservation Strategy is to ensure that the concept of sustainable development is an integral part of all activities taking place in P.E.I., whether initiated through government, non-govenment organizations or the private sector.

The Strategy states that all government departments have a responsibility to ensure that the concept of sustainability is incorporated into their activities. The Deputy Minister of the Department coordinates government activities, in support of the Strategy, through the Environmental Coordinating Committee.

Conservation Strategy activities for the past year are summarized as follows:

Natural Areas Protection Act

The Natural Areas Protection Act will be a key element for a newly developed Significant Environmental Areas Plan. This plan will serve to co-ordinate the protection of 94 examples of the principal habitat types found in P.E.I. All sites will be designated when appropriate under the Natural Areas Protection Act, as well as other legislation. Executive Council approved the designation of 72 crown properties found within 39 of the Significant Environmental Areas. Government agreed to participate in the Endangered Species Program of the World Wildlife Fund; a target of protecting 70 of the 94 sites by the year 2000 was established. Three sites were designated under the Natural Areas Protection Act.

Scenic Heritage Roads

No new roads were designated in 1991. Discussions aimed at establishing additional designations were initiated with several communities. Management plans for these roads were initiated.

Liaison with Dept. of Transportation & Public Works

In conjunction with the Environmental Advisory Council, meetings were held with personnel from the Department of Transportation & Public Works to discuss the implementation and encouragement of environmentally-beneficial actions as part of road maintenance.

Island Conservation Assistance Program

A key recommendation of the Conservation Strategy was the establishment of a fund to support environmentally-based community projects.

In conjunction with the Fund, a program to acquire and maintain equipment for use in projects in subsequent seasons/years was established. During 1991, 30 community projects employing seasonal staff of 114 individuals (mostly students) were hired.

A summary of projects follows:

Organization	No. of Employees	Location	Activities
Souris and Area Branch PEI Wildlife Federation	8	Fortune River - Johnny Belinda Creek - Big Brook - McInnises Brook	• stream enhancement • stream enhancement • stream enhancement
and			
South Lake Community Council		East Lake Creek	• stream enhancement, • population assessment
		North Lake Brook	• stream enhancement, • population assessment
		Cross River	• stream enhancement
St. Margarets Parish	5	St. Margarets - Bear River	• stream enhancement • woodlot management • transplanting hardwoods
Souris Striders	3	Souris Area	• development of cross country ski trail
Morell River Management Co-op	7	Morell River	• river enhancement • river inventory • operation of Mooneys Pond semi-natural salmon rearing site
Sturgeon River Enhancement Association and Montague Watershed Enhancement Co-op and Wildlife Habitat Canada	3 18	Sturgeon River Montague River and Valleyfield River	• river enhancement • fish habitat, population and passage assessment • habitat enhancement • trail construction and maintenance • salmon stocking and artificial redd development • ditch erosion control • nest box construction and installation
		Cardigan River	• fish habitat enhancement
		Brudenell River	• fish habitat enhancement
Ducks Unlimited	2	Kings County	• wetland management
Belle River Environmental Protection Association	3	Belle River	• stream enhancement
Belfast Community Council	2	Belle River Dump Belfast Dump	• establishment recycling program at dump • public education about recycling

Tracadie Lions Club	3	Black Brook, streams running into and draining DeRoche Pond Millers Brook	• stream obstruction removal and enhancement
Island Nature Trust	4	PEI-Wide Natural Areas	• biological surveys, • signage and land owner contact in natural areas
Alexandra Community Council	2	Alexandra	• tree planting in conservation zone • stream enhancement
Charlottetown Rural Environmental Club	3	Ellens Creek	• creek clean up • development of nature trail • vegetation inventory
Central Queens Branch PEI Wildlife Federation	2	Bonshaw River	• stream enchancement
Ducks Unlimited	2	Queens Co.	• wetland management
Federation of Fly Fishers	18	Bonshaw River	• stream enhancement • watershed management
North Queens Branch PEI Wildlife Federation	3	Wheatley River	• stream enhancement
Hampton/DeSable Women's Institute	3	DeSable River	• stream enhancement • ditch erosion abatement
Hunter River Lions Club	4	Hunter River	• stream enhancement
Kinkora Area Business Commission	2	Dunk River	• upgrading of trail tours for schools, youth groups, local residents & tourists
Prince Co. Ducks Unlimited/ Kensington Chamber of Commerce	4	Indian River	• development of educational/recreational trail
East Prince Wildlife Federation	3	Dunk River	• river enhancement
West Prince Bird Conservatory	1	Portage	• development and operation of educational trail • enhancement of waterfowl habitat
O'Leary Wildlife Federation and West Prince Allied Youth and West Prince Chamber of Commerce	9 1 2	Mill River Trout River	• river enhancement • operation of fish counting fence • river enhancement • operation of fish counting fence

		Stewarts Brook Brae River	• maintenance of fish passage • stream habitat enhancement
		Profits Pond	• maintenance of facility feeding fish • distribution of fish
PEI Wildlife Federation	1	Province-wide	• organization • revitalization • organization • newsletter and administration • project support
PEI Soil and Crop Association	-	Queens Co.	• Demonstration/test of alternate watering techniques for cattle to reduce stream deterioration by cattle - 4 sites
Environmental Coalition of PEI	-	Charlottetown people attended from across PEI	• environmental workshop 50 people in attendance
St. Peters Bay Community Council and Institute of Island Studies	-	St. Peters Bay Watershed	• countryside stewardship exchange • knowledgeable professional from USA and UK, with strong support from residents develop options for sustainable development for area

ENVIRONMENTAL PROTECTION BRANCH

The Environmental Protection Branch administers a range of programs and legislation which are designed to control and reduce various forms of contamination in the Province. This includes: air quality, derelict vehicles, excavation pits, hazardous wastes, litter, beverage containers, solid waste management, subdivision assessment, unsightly properties, utility operation, wastewater discharge and special projects.

In December, the Litter Control Regulations were amended to implement a deposit/refund system for liquor and wine bottles and to require refillable containers for low alcoholic beers. These regulations will help to reduce the amount of litter which is generated in the province.

The implementation of the Waste Reduction Program was a major activity for the Branch. A summary of activities conducted under this program are given in Table A.

The wastewater quality at the Northeast Energy Services Ltd. plant at New Annan continues to show good results. The plant treats the wastes from the Cavendish Farms food processing plant and the wastewater effluent meets the federal requirements for suspended solids and biological oxygen demand. Some repairs and improvements were undertaken at the waste treatment plant in 1991. Branch staff were also extensively involved in the review of plans associated with the proposed expansion of the Cavendish Farms Plant and development of an interim operating plan for the plant.

Branch staff are also involved in regular inspections of the wastewater treatment system at the new McCain Foods Plant in Carleton. This plant is designed to treat the waste for the equivalent of a population of 2,000,000 people.

The Environmental Protection Branch was also involved in investigating 507 complaints during the year. A summary of these is given in Table B.

Excavation Pit Program

New regulations became law on February 1, 1991. The position of Controller of Licenses was reclassified to Environment Officer II and filled during the year. A total of 189 excavation pits were licensed during the year and a number of inspections conducted.

Intergovernmental Cooperation

The Branch is represented on a variety of provincial, regional and national committees/working groups which address issues for which the Branch is responsible.

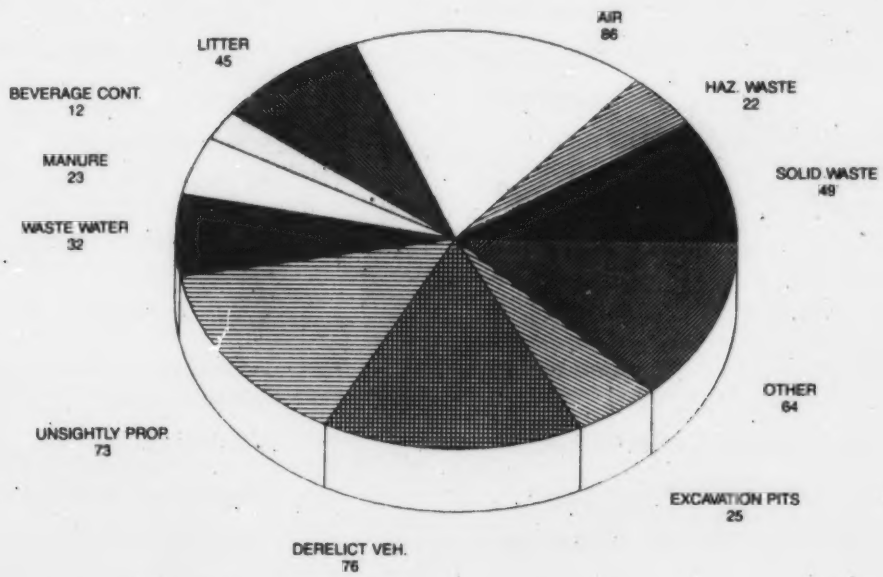
Enforcement

The Branch is involved in a number of enforcement activities which are summarized in Table "C".

TABLE A
WASTE REDUCTION PROGRAM
1991 ACTIVITIES

COMPONENT	TASK	DESCRIPTION
Public Consultation	Environment Conference	3 completed
	Farm Women	Conference at S'Side
	Dump Committees	29 meetings held
	Municipalities	several meetings held
	Individuals	on-going
Site Improvements	St. Eleanor's	leachate collection system & other site improvements
	Murray River	compaction container site installed
Financing	Tippage fees	implemented for commercial and industrial refuse
	Tire tax	$2 charge per tire
Infrastructure	Install scales	completed at 4 locations
	Install equipment	buildings & computers installed
	Let contracts	all sites now supervised
	Metal crusher	for white goods at disposal sites
Education	Fact Sheets	2 fact sheets completed (composting, reduction & reuse)
	Composting Workshop	held at North River
	Composting Booth	at Old Home Week
	Seed Project	5 projects approved
Government Projects	Papersave	now expanded to 10 government departments in Ch'town, Souris & Montague
	Prov. Parks	recycling centers installed at 8 provincial parks
	Container Sites	recycling centers installed at 4 sites
	Liquor & Wine Bottles	deposit/refund system announced
	Low Alcoholic Beer	to be in refillable containers

TABLE B
SUMMARY OF COMPLAINTS
Environmental Protection Branch



TOTAL FOR 1991 - 507 RECEIVED

TABLE C
ENFORCEMENT ACTIVITY
Environmental Protection Branch

Act/Regulations	Section	# of Cases	Status
Environmental Protection Act	7(7-1)	6	Ministerial Orders
Environmental Protection Act	20	1	found guilty
Environmental Protection Act	24	2	1 found guilty
Sewage Regulations	16	1	found guilty
Litter Control Regulations	3	9	all guilty
Excavation Pit Regulations	2	5	2 guilty 1 withdrawn 2 pending
Excavation Pit Regulations	7	2	orders
Unsightly Property Act	2	7	Clean-up Orders
Unsightly Property Act	18	6	3 guilty 2 appealed 1 awaiting trial
Highway Traffic Act	226(5)	1	
TOTAL		**40**	

Derelict Vehicles

Approximately 2,900 vehicles were hauled to 17 storage sites by 3 provincial contractors during 1991, resulting in 2,095 tons of crushed vehicles being removed from provincial sites. An additional 3,440 tons were removed from private yards. As a result 5,535 tons of scrap metal were shipped to a plant near Moncton, New Brunswick for shredding and shipment to the steel mills.

Unsightly Building Program

There are 86 applications on file representing approximately 110 buildings that are marked for removal this year. The local fire departments have received notes to do the burning on 90 of these buildings, with the remaining 20 being cleaned-up by the owners. Seventy-three of the 110 buildings have been cleaned-up.

Unsightly Property Inspection

In 1990 there were approximately 132 new complaints received by the Department. Inspections were carried out on these complaints and notes were sent to the owners indicating a clean-up was required. A breakdown of the complaints by County are as follows:

Kings County	28
Queens County	75
Prince County	29

Approximately 20% of these complaints have been investigated and completed with a number of them in various stages of working toward completion.

Air Quality/Hazardous Waste/Regional Services Section

General

This Section responded to general information requests, complaints and investigations involving a wide range of environmental issues.

Activity related to environmental impact assessment increased. Assessments and proposals were reviewed for technical content related to air quality and hazardous waste.

Air Quality

International or global air quality issues continue to gain prominence. This Section represented the province on national committees addressing global warming, stratospheric ozone layer, acid rain and ground level ozone or smog.

In order to keep pace with new developments both in technology and regulatory considerations, this Section participated in committee activities under the Canadian Council of Ministers of the Environment (CCME). National and regional committees were active in addressing nitrogen oxides, volatile organic compounds, recycling and recovery of CFCs, sulphur dioxide and carbon dioxide. The province was represented by this Section on several other committees as a corresponding member without actively participating.

A brief was presented to the Nova Scotia Task Force on Clean Air at a hearing in Pictou, Nova Scotia. The concerns of Islanders about the emissions from the Scott Paper Mill in Abercrombie, N.S. were presented. Many individuals participated in developing the brief through meetings and personal conversations with staff of this section.

Air quality monitoring continued under two federal-provincial programs - the National Air Pollutant Surveillance Program (N.A.P.S.) and the Long Range Transport of Air Pollutants Program (L.R.T.A.P., chiefly concerned with acid rain).

The Charlottetown NAPS Station regularly samples sulphur dioxide, lead and particulate matter in the ambient air and provides this information to Environment Canada's national air quality monitoring program. Precipitation samples are collected to monitor the long term changes in acid rain. Since other pollutants are being addressed in management plans, it will be important to expand our monitoring program. This Section will work with Environment Canada to plan our long-term monitoring priorities.

P.E.I. participated in a limited way in the NOx-VOC Management Plan. This CCME program outlines many measures to control oxidants and reduce ground level ozone. The Highway Safety Division of the Department of Transportation and Public Works agreed to include an inspection of vehicle emission control systems as part of the annual safety inspection. This effort will reduce automobile emissions by ensuring that emission controls are in place.

Asphalt plants are required to have a Certificate of Approval from this Department. This Section was responsible for issuing the permits and inspecting both mobile and permanent asphalt plants.

Air Quality Regulations were developed under the Environmental Protection Act. The new Regulations were distributed to interested individuals and companies for comments and review late in 1991. The draft regulations are based on nationally accepted ambient air quality objectives rather than specific emission limits. They make provision for a system of operating permits for each source of air contaminants. The permit will outline terms and conditions specific to the operation and may specify emission limits or monitoring requirements. As a long term goal, it is desirable to have controls on all stationary sources of emissions to the atmosphere, commensurate with the known or suspected hazard of the contaminants being emitted.

Over 100 complaints related specifically to air quality were investigated by this Section in 1991. These related primarily to local issues such as noise, odour, asphalt plants, soot, open burning and wood smoke.

This Section responded to a variety of general information requests on topics such as air pollution, acid rain, ozone layer, CFCs, and the greenhouse effect.

Hazardous Waste

In 1991, advice was provided to a broad range of clients regarding waste disposal options. Inquiries ranged from the disposal of household products such as paint, pesticides or batteries, to lists of surplus chemicals from laboratories and industrial wastes. A number of investigations of the waste disposal and chemical management practices of businesses were conducted by this Section in response to complaints or inquiries.

On several occasions, this Section facilitated the exchange of chemicals between people that wanted to dispose of them, and people interested in using the material. More individuals and businesses are interested in following environment-friendly practices, but are not sure how to begin. Inquiries about recycling and non-toxic alternatives to hazardous products increased dramatically.

P.E.I. participated in a national workshop on used oil. The disposal and management of used oil is a rapidly growing issue. It will be important to coordinate our response and regulations with those of other governments in the region. The workshop provided the forum for an excellent discussion among used oil generators, collectors, re-refiners, users, regulators, retailers and wholesalers. This cooperative effort by all stakeholders will be a useful model for addressing other waste management issues.

In 1990, a "Memorandum of Understanding Concerning the Siting and Operation of Mobile Incineration Unit" between Environment Canada and the four Atlantic Environment Departments was signed. P.E.I. actively participated in the management of the Atlantic Region High Level PCB Destruction Program throughout 1991. As one step in the Program, a meeting for public consultation on the draft siting criteria was held in Charlottetown. This project will continue for the next several years.

Specific chemicals become unstable over time, and the only method of disposal is by detonation. This Section coordinated the disposal of a small quantity of unstable chemicals by the RCMP Explosives Disposal Unit.

This section is responsible for the regular inspection of the PCB storage site in Georgetown, owned by the P.E.I. Development Agency.

Under the Transportation of Dangerous Goods Act, this Section is responsible for manifesting the transportation of hazardous wastes. Copies of waste manifests describing shipments which originate in P.E.I. are received regularly. Regular reports about hazardous waste movement are prepared for coordination by Environment Canada. More responsible waste management by P.E.I. businesses has lead to increased numbers of waste manifests.

Public concern about hazardous chemicals is increasing as was evidenced by the large number of general inquiries received regarding toxic materials, PCBs, pesticides, waste manifests and household hazardous wastes.

Efforts to establish a national code of practice for biomedical waste management practices continued. All Island health care facilities are very conscious of the need for infection control and responsible waste management. Discussions continued regarding the options for regional services for biomedical waste disposal.

Continuing education is essential to keep pace with the rapidly changing technology and regulations. New Brunswick organized a workshop to discuss a hazardous waste handling strategy; staff of this Section attended and greatly benefitted from the discussion of this complex issue.

Regional Services

In 1991, both regional Environment Officer positions were staffed. These officers provide regional services related to environmental protection from offices in the Southern Queens and Kings, and West Prince Regional Services Centres.

These positions allow a regional approach to diverse technical activities under the mandate of the Department of the Environment. This Section has significant liaison with other departmental branches and provides a general service to the public on environmental matters.

Waste Management & Utilities

This section is directly responsible for the daily operations of the three regional sanitary landfill sites in Prince County (St. Eleanor's), Queens County (Miltonvale Park), and Kings County (Cardigan), and six rural refuse container sites, one of which is in Kings County and five in Queens County. Another three rural refuse container sites, two in Kings County and one in Prince County, are serviced by the Province but day to day operations are handled by the community in which they are located.

Another thirty (30) community refuse disposal sites are situated across the Island serving areas of the Province not served by the regional landfills or the Energy from Waste Plant in Parkdale.

All thirty (30) of the sites are managed by Community Councils or by Community Disposal Site Committees with technical assistance and funding being provided by the Department.

Two of these sites, Souris and Tignish have unique agreements between the Department, the community and private contractors to provide management services at the local disposal site.

On January 1, 1991 the Province embarked on a major initiative called the Waste Reduction Program for Prince Edward Island - "Starting in our Own Backyard". The Program consists of four main components: education and information; public consultation; improved waste management facilities; and a disposal fee system. A summary of activities of this Program is given in Table "A".

The Section represents the Department on the operating committee for the Energy from Waste Plant (EFW) located on Riverside Drive in Parkdale. The Department currently pays a tippage fee of $26 per tonne of garbage treated at the Energy from Waste Plant. The steam generated is sent to the Queen Elizabeth Hospital, Hillsborough Hospital and the Sherwood Home and displaces approximately 20,000 bbls of oil per year.

The Energy from Waste Plant serves a population of approximately 45,000 people in the greater Charlottetown area and treated some 32,000 tonnes of municipal solid waste (MSW) this year. This volume of MSW means that for almost eight months of the year the Energy from Waste Plant is at or near capacity of 99 tonnes per day.

On a broader scale the staff have been involved with the Energy Corporation in examining the existing waste management system on Prince Edward Island and how this system can be improved to better handle the municipal solid waste generated in the province while obtaining the maximum amount of recoverable energy through the disposal process. It is a long term goal to be able to remove the non-burnable material to better utilize the plant and appropriately treat the waste.

In order to keep abreast of new developments, both in technology and regulatory considerations, the Section represents the province on the National Waste Management Committee established by the Canadian Council of Ministers of the Environment (CCME). The Section is also represented on the National Packaging Task Force whose primary goal is to reduce packaging waste and contribute to a 50% overall reduction of waste by the year 2000.

The Section is committed to keeping pace with the changing technology and meeting the increased public demands to provide efficient and environmentally-sound disposal methods for P.E.I.'s Municipal Solid Waste.

The Department has constructed a new rural refuse container site at Murray River. This new container site was made necessary because of the closure of the old disposal site.

Approximately 49 complaints involving the use of private dumps for household garbage, manure storage, fish offal and similar environmental problems involving municipal solid waste were investigated, with most being resolved in a constructive manner.

A total of approximately 214 permits were issued to individuals under the disposal permit system for special waste treatment and or disposal at the regional landfills and community refuse disposal sites. For a summary of other activities of the Waste Management Program, see Table "D"

TABLE "D"
WASTE MANAGEMENT PROGRAM
Summary of Activities

Volume of ash hauled from Energy from Waste Plant		28,750 m^3
No. of containers from EFW Plant to Sleepy Hollow		191
No. of containers from the 9 container sites to disposal sites:		
	EFW	533
	Cardigan	189
	Sleepy Hollow	98
	St. Eleanors	360
	TOTAL	**1,180**

Utilities and Wastewater Section

The primary objective of this section of the Environmental Protection Branch is to provide engineering and technical assistance to municipalities, industry, government agencies and individuals in the design, construction, operation and maintenance of water supply and wastewater disposal systems. This involves the issuing of Certificate of Approval Permits under the Environmental Protection Act requiring review of engineering drawings, cost estimates, construction and as built drawings. In 1991, 50 permits were issued, an increase of 30% from 1990 with an estimated construction value of 7 million dollars.

Under this Section the Environmental Servicing Assistance Program (E.S.A.P.) funds are made available to municipalities for the development, through studies and construction, of new and expansion to existing water and wastewater systems. In 1991, $850,000 in available funding assisted the following centers in their utility development: Cornwall, Miminegash, O'Leary, Sherwood, CAPCC, Bunbury, Southport, Cross Roads, Keppoch-Kinlock, East Royalty, Winsloe, Sherbrooke, North River, Parkdale, West Royalty, Charlottetown, Hunter River, Montague, Brudenell, Murray River and Murray Harbour.

The Section is responsible for the administration, operation and maintenance of provincially-owned water supply systems with an assessed value of approximately $8 million. These systems service 55 industrial/commercial customers and 300 domestic customers located in Brudenell, Souris, Georgetown, North Rustico, Egmont Bay, Alberton South, Cross Roads and Beach Point.

In an effort to ensure wastewater treatment plants are operating efficiently, a monitoring program of 55 facilities throughout the province continued in 1991. Inspection, sampling and analytical review of results were conducted of all municipal, industrial/commercial and institutional facilities whether seasonal or in continuous operation throughout the province.

Technical reviews were conducted on approximately 60 subdivisions in 1991 at the request of Community & Cultural Affairs' Development Section. This involves an evaluation of the properties for on-site water supply and sewage disposal systems. Detailed groundwater and soils review ranging from water quantity and quality tests to soils test pits are required prior to issuing final recommendations.

Staff also provides technical assistance to Community & Cultural Affairs' Building Development Officers when assessing new and remedial action for on-site sewage treatment. In 1991 approximately 100 sites and systems were reviewed and recommendations made prior to issuing of on-site sewage disposal permits. In 1991 thirty-two (32) septic tank pump truck operators were authorized for septic tank pumping and sewage sludge disposal.

This section also responded to 40 sewage disposal complaints as a result of improper waste disposal. As well 25 complaints were investigated regarding manure storage and land application of waste in the farming community.

FISH AND WILDLIFE BRANCH

Programs and activities of the Fish and Wildlife Branch are directed at the conservation, protection and enhancement of the Province's wildlife and sport fish resources, providing recreational and economic opportunities.

Interest and enjoyment in these renewable resources is shared by a majority of the population. In addition to the obvious importance of fish and wildlife to anglers, hunters and trappers, a 1987 survey determined that 92 percent of the Province's residents participated in one or more wildlife-related activities. The survey determined that residents spent $19.5 million on wildlife-related activities on their own property.

This report summarizes projects and activities in the major program areas of the Branch.

Fisheries

Habitat

The Fish and Wildlife Branch is responsible for the maintenance and management of approximately 90 dam sites in the Province. Inspections of these sites are carried out on a continuing basis and minor repairs were made to several sites in 1990. Major fishway repairs were carried out at Breadalbane Pond, Breadalbane and Grigg's Pond, Ellerslie during the summer of 1991.

Major construction scheduled for Gordon's Pond, Montrose in 1990 had to be abandoned due to a land ownership conflict. The land ownership question is in the process of being resolved with Gordon's Pond tentatively scheduled for construction in 1992. Livingston's Pond, Glenwood and Cass's Pond, Covehead were drawn down in late fall of 1991 and will be reflooded in early summer of 1992.

Several habitat improvement projects were provided technical and material assistance, primarily in cooperation with and in support of the Young Environmentalists Program. In addition Souris and Area Wildlife Federation sponsored projects were assisted substantially.

Upstream movements of fish were monitored at several fishways during the 1991 field season. The data collected provide information on the timing and size of sea-run salmonid populations, as well as other species, such as white perch, gaspereau and eels. During 1991, traps were operated at Bell's Pond, New Glasgow; Scale's Pond, Freetown; Millar's Pond, Kelvin; Officer's Pond, Suffolk; Knox's Pond, Montague; Old Maritime Electric Pond, Valleyfield. Traps at MacLean's Pond, Vernon River and on Big Brook, Fortune River were installed and operated for part of the 1991 field season.

Stock Enhancement

High quality rainbow trout fisheries were again supported in 1991 at O'Keefes and Glenfinnan Lakes with the stocking of 21,000 fingerlings from the Cardigan Salmonid Enhancement Center. Water quality in both lakes is monitored on a regular basis in cooperation with the Department's Marine Division. An experimental winter fishery was offered on Glenfinnan and O'Keefe's Lake in 1991 and proved very popular. The fishery will be offered again in 1992 on an extended basis. It is proposed that this fishery can be offered in West Prince and East Kings in 1993 as several borrow pits in both areas were stocked with approximately 18,500 rainbow trout.

Speckled (Brook) Trout from wild sea run stock were stocked in various areas of Prince Edward Island. These fish were reared at the Cardigan Salmonid Enhancement Center and released during the 1991 field season. In total 33,000 speckled trout were released in 1991.

The Fish and Wildlife Branch continued to support Fisheries and Oceans Canada's Atlantic salmon enhancement program in the Province by providing manpower to assist in the rearing of fish at the Cardigan Salmonid Enhancement Center. A seasonal technician employed by the Branch worked at the Cardigan Hatchery. In addition two students were stationed at Profitt's Pond semi-natural rearing site through the Department of Industry's student job program while financial assistance was provided to the Morell River Management Coop in its operation of the Mooney's Pond semi-natural rearing facility.

Sportfishing Survey

A comprehensive socioeconomic survey of the recreational sports fishery was completed in 1991. This is a cooperative project with Fisheries and Oceans Canada and will be the fourth survey of its kind to be undertaken. This survey is repeated every five years and demonstrates the recreational and economic benefits of the sports fishery on Prince Edward Island. The final results from this survey will be published in early summer, 1992.

Surface Water Inventory

An inventory of major water systems continued in 1991 under the auspices of the Canada-P.E.I. Water Management Agreement with Environment Canada. This information is viewed to be extremely valuable to the future management of our surface water resource. There have already been demands for compiled information, reflecting the value of the program. Inventories for all watersheds in the Province were completed by October 31, 1991, with reports complete and print ready.

Upland Game

Forest management continued on Fish and Wildlife managed properties in 1991 in cooperation with the P.E.I. Forestry Division. Technical assistance from Montague Watershed Project staff facilitated the implementation of forest management plans. There is an urgent need for on-going technical assistance to plan and implement forest management practices consistent with good wildlife management principles on Branch managed lands. The Branch has approximately 12,000 acres of forest land requiring on-going management to optimize direct economic and recreational benefits.

The cooperative pheasant rearing and release program with the P.E.I. 4-H Council was continued in 1991 with 13 groups of 2-3 4-H members from various areas of the Province participating. Each group was given 24 chicks along with the necessary feed and information to rear chicks to release age. The following 4-H clubs were involved with this program in 1991 - Dunstaffnage-Marshfield, North River, Freetown, Belfast, Cavendish, New Annan, Lot 16, Winsloe, Brackley, Souris area, Mermaid-Mt. Herbert, and Miminegash.

As in past years, the Earnscliffe Shooting Preserve was provided technical and financial assistance for its pheasant rearing and release operations. The preserve offers residents and non-residents the opportunity to pursue pheasants under natural field conditions.

The sharptail grouse introduction continued to be evaluated in 1991 and efforts to monitor its success were increased. An individual from the Souris area was retained to monitor the status of released birds and to attempt to locate breeding birds. Several positive sightings were confirmed. A relatively large concentration of birds is still in the Greenwich area of Kings County. In addition, a sharptail dancing ground was located in the Greenwich area. As well birds have been seen in the Big Pond and Red Point areas. Monitoring will continue in 1992.

Winter counts of gray (Hungarian) partridge are done on an annual basis, when snow conditions permit, to assess over winter survival and to provide an index of population size. In 1990, severe winter weather and a cool wet nesting season placed the partridge population under considerable stress, resulting in a closure of the 1990 and 1991 Hunting Seasons for the species. The status of the gray partridge population will be further assessed in 1992.

Cooperative Watershed Management Project

The integrated, cooperative watershed management project on the Montague/Valleyfield watershed expired in September, 1991. This highly successful demonstration project broke new ground with its multi-faceted programs in forest/wildlife management, stream improvement, soil conservation, erosion control and public awareness. The establishment and promotion of pilot demonstration projects have proven invaluable to other government and non-government organizations throughout Prince Edward Island.

Overall direction for the project was provided by a twenty-five member steering committee devised from a diverse range of both federal and provincial governments, non-government organizations, municipalities and educational institutions. The principal, Wildlife Habitat Canada, provided the core operational funds in the amount of $685,000 while almost $2 million was generated from participating partnerships throughout the five years of the project's operation. Throughout the life of the program over 225 individuals actively participated in such land and water based activities as hedgerow establishment, stream enhancement, trail building, fence construction, erosion prevention, salmon stocking and tree planting.

A highlight of 1991 was the expansion to the Sturgeon and Brudenell Rivers, where 25 km of stream were improved. A number of instream habitat improvement devices were installed on the Valleyfield River, while maintenance of roadside sediment traps and construction of tap drains, berms and additional traps were constructed along the South Montague Road near Knox's Dam. A number of training programs and tours of demonstration sites were conducted for forestry personnel and summer students working on stream improvement projects across the Island. A major environmental awareness campaign saw the participation of almost 500 to 1,400 students in the elementary and junior high school levels, respectively, involving 42 Island schools.

A series of technical reports documenting the responses of fish, birds and mammals to habitat improvements in the Montague/Valleyfield watershed was produced and distributed to agencies across Canada and the United States. An initiative which received widespread attention from recreational sport fishermen was the reintroduction of Atlantic salmon to the Valleyfield River. Approximately 72,000 fingerlings, 6,000 smolts and 10,000 salmonid eggs were stocked in the Valleyfield River in 1991. The return of grilse was lower in 1991 with only 4 fish returning. Expectations for 1992 based on the records of previous years suggest a return estimate of 35 grilse with the 1993 estimate of 100 grilse. As a result of stream improvement efforts throughout the life of the Program, both the Valleyfield and Montague Rivers boast significant increases in brook trout abundance and size.

Established in 1990, the Montague Watershed Enhancement Cooperative, with a current membership of 20 and a distribution of 70, will ensure that completed works are maintained and monitored throughout the watersheds. The Cooperative's most significant undertaking in 1991 was the sponsorship of an Atlantic Coastal Action Program (ACAP) initiative for the Cardigan Bay watershed area. This Green Plan venture delivered by Environment Canada will ensure that coastal environments in the Boughton-Murray Harbour area will be managed and protected on a watershed basis. The chief product of the ACAP project will be the development of a Comprehensive Environmental Management Plan complete with timetables and details for resource protection and problem remediation.

The culmination of the Montague Watershed Project represents only the beginning of a regional expansion of the principles of integrated watershed management through cooperation and involvement.

INTERIM SUMMARY III

Summary of the Management Objectives of the Co-operative Watershed Management Project, 1 April, 1990 - 30 September, 1992.

Habitat Component	Management Objective		Amount Completed 1 April, 1991 - 30 September, 1992	Amount Completed Five Year Project Totals
HEDGEROW	Established		0.65 km	31.53 km
	Rejuvenated		0.6 km	16.05 km
STREAM IMPROVEMENT	Obstruction Removal		39.55 km	80.05 km
	Valleyfield River	8.5		
	French Creek	2.9		
	Brown's Creek	2.7		
	Sturgeon River	13.9		
	Brudenell River	8.0		
	Thompson Creek	3.15		
	Maintenance	26.4		
	Habitat Improvement			
	Log Deflectors		1 km	27.4 km
	Weirs		9	11
	Bridge Baffles (Brooklyn, Heatherdale)		2	8
	Gabion Deflectors		17 4 upgraded	45
	Braided channel diversions		2	9
	Pool diggers (Montague River)		9	15
	In-stream Sediment Catchment Basins		5 (Maintained)	5
RIPARIAN ZONE MANAGEMENT	*Tree Salvage		1.35 km	18.05 km
	*Reforestation (HWD)		1200 trees	3505 trees
	(SWD)		1560 trees	14,756 trees
	beaver management		1000 aspen	1000 aspen
	*Slash Pile Creation		1.35 km	2.35 km
	*Bank Stabilization		0 km	34.02 km
	*Fencing		3.2 km	5.5 km
	maintenance		2.3 km	

FOREST MANAGEMENT (FRDA - PRIVATE LAND MANAGEMENT PROGRAM	*Harvesting (softwood)	59.73 ha	172:03 ha
	(hardwood)	1.88 ha	6.28 ha
	(mixed wood)	10.62 ha	27.82 ha
	*Stand Improvement		
	(commercial HWD)	13.83 ha	22.83 ha
	(commercial SWD)	-----	1.8 ha
	(pre-commercial HWD)	-----	-----
	(pre-commercial SWD)	24.0 ha	33.9 ha
	*Road Construction	6.65 km	15.13 km
	Maintenance	3,17 km	
	*Bridge Construction	2	3
	*Culvert Installation	2	10
	*Boundary Line Establishment	2.42 km	31.32 km
	*Plantation	7.0 ha	55.8 ha
	*Maintenance (chemical)	8.45 ha	9.65 ha
	*Site Preparation	65.0 ha	173.2 ha
	*Reforestation	65.0 ha	101.9 ha
	*Fill Planting	0	6.16 ha
CROWN LAND MANAGEMENT - MONTAGUE WATERSHED	*Harvesting (Hardwood)	1.0 ha	2.4 ha
	(Softwood)	-----	5.5 ha
	*Site Preparation	5.8 ha	5.8 ha
	*Reforestation	2.0 ha	2.0 ha
	*Stand Improvement	-----	4.0 ha
SPECIAL PLANTING	Softwood	5245 trees	5245 trees
	Hardwood (Yellow Birch)	3930 trees	3930 trees
	(White Birch)		
HIGHWAY IMPROVEMENT	Erosion Control		
	roadside sediment traps	10	30
	diversion channel	2	5
	hydroseeding	3.3 km	11.3 km
AGRICULTURE	Soil and Water Conservation Projects		
	diversion terracing	1	2
	outlet stabilization	1	1
	grassed waterway	1	1

* These figures do not include January - September, 1991.

Migratory Birds

Habitat

The Waterfowl Habitat Management Program consists of the development and enhancement of wetlands for both wildlife habitat and public use. For the past twenty-one years, Ducks Unlimited Canada, in cooperation with the Fish and Wildlife Branch and private landowners, has developed and improved 97 marshes on Prince Edward Island, totalling 7,016 acres and including 176.4 miles of shoreline.

The Branch continued to sow wild rice on newly flooded impoundments and assessment of previous plantings continued. The program to provide wood duck box plans and information to groups and individuals continued in 1991. The Branch also erected new boxes and maintained and replaced old ones in a number of wetlands during the year.

Eastern Habitat Joint Venture

Wetlands conservation is the major goal of the Eastern Habitat Joint Venture under the North American Waterfowl Management Program. The EHJV Five-Year Plan for P.E.I. identifies expenditures of $2.7 million for securement and enhancement of wetlands from 1990 through 1994. Specific programs include acquisition of fresh marsh and salt marsh systems, and development and enhancement of existing marshes in cooperation with Ducks Unlimited Canada. In addition a "stewardship" program has been established to encourage landowners to practise wetland conservation on private property. A major funder of this program is Wildlife Habitat Canada.

In 1991, wetland acquisition was facilitated through funding from Environment Canada and the United States Wetlands Conservation Council. Six sites across Prince Edward Island where high quality wetlands are present were targeted, and a summary of lands purchased is shown in Table 1. Uplands were also acquired to provide protection for the wetlands and to be managed for wildlife.

Ducks Unlimited Canada (DUC) also contributed to the Eastern Habitat Joint Venture with the drawdown of Fullerton's Marsh and Pius MacDonald's Pond, Southampton for the purpose of improving productivity. As well, DUC was involved in developing other wetlands in cooperation with private landowners.

The Wetland Stewardship Program was launched through funding provided by Wildlife Habitat Canada and the Fish and Wildlife Branch; 1991 represented year one of a four-year project. The Stewardship Program will focus on wetland protection and enhancement on private land and in enlisting landowner support for conservation. The primary effort will be directed at the abatement of soil erosion, the greatest threat to wetlands on Prince Edward Island. Year one of this project involved considerable cooperative efforts with agriculture departments and the agricultural community. Funding was received from Agriculture Canada to investigate the control of soil erosion through land retirement and the promotion of alternate land uses. The Prince Edward Island Soil and Crop Improvement Association co-operated on a project to demonstrate the advantages of fencing livestock from wetlands and of providing an alternate method of watering livestock. A summary of activities in 1991 is shown in Table 2.

Private landowner contact leading to the establishment of greenbelts, small marsh development and maintenance of previously planted hedgerows began in four watersheds identified as especially important to wetlands. Cooperation with seven communities is expected to result in land use policies and by-laws to protect and enhance wetland habitat. Beaver habitat was managed in eight watersheds in Kings and Queens counties. Newly flooded beaver impoundments provide a diverse habitat for many wildlife species. A continuation of the wood duck box maintenance and installation program indicated that six percent of the monitored boxes were used by wood ducks and thirty-four percent were used by other bird species such as tree swallows. It is expected that more boxes will be used by wood ducks in future years as both ducks and volunteer efforts continue to increase. A program to control purple loosestrife, a plant that causes wetland degradation, was developed.

TABLE 1. Wetland acquisitions in 1991

Acquisition	SALT MARSH			FRESH MARSH					
	Pisquid	Mt. Stewart	Total Salt	Farmington	Woodville Mills	Hermitage	Coleman	Total Fresh	GRAND TOTAL (ha)
Total area (hectares)	34	74	108	72	3	34	15	124	232
Wetland area (hectares)	11	30	41	36	0	11	2	49	90

TABLE 2. A summary of P.E.I. Wetland Stewardship Program Activities 1991

ACTIVITY	HABITAT ENHANCED/ PROTECTED (HA)	PRIVATE LANDOWNERS INVOLVED
Agriculture Canada Alternate Land Use/Land Retirement Project	N/A	445
Beaver Management	128	71
Purple Loosestrife	*0.5	11
Greenbelt Establishment	305	13
Cattle Fencing/Watering Demonstration Projects	15	10
Highway Erosion Control	54	N/A
Small Marsh Development	6	6
Totals	508.5	556

Note: * 0.5 ha of experimental plots herbicided in 1991.

Surveys/Banding

Waterfowl breeding pair and brood surveys were conducted again in 1991. The surveys provide an annual index of waterfowl production for wetlands across the Province and aid in regulatory management decisions. The surveys are conducted cooperatively with the Canadian Wildlife Service, with the Service providing supplementary field crews and data analysis. An analysis of data collected over the first six years indicated the need for regulatory changes designed to enhance the survival of locally produced blacks ducks. In response, the opening of the hunting season for black ducks has been delayed two weeks since 1989. As a result of the delayed seasons, the black duck kills have been reduced significantly and spring breeding pair counts have increased by 29% in 1990 and 1991.

The Branch co-operates with the Canadian Wildlife Service and the Atlantic Waterfowl Council in banding waterfowl to determine migration routes, harvest patterns and mortality rates for ducks and geese. Branch staff were involved in banding waterfowl that overwinter in the Province. The results of this winter banding are summarized below.

Summary of Winter Banding
Prince Edward Island
1991

Species	Male	Female	Total
Black Duck	400	171	571
Mallard	19	5	24
Black X Mallard Hybrid	11	2	13
Total			608

Banding Period: 01-08-91 thru 04-08-91

Efforts were also directed at banding locally produced ducks with the assistance and cooperation of the Canadian Wildlife Service. The results are summarized below. Of note was the banding of black ducks, blue-winged teal, green-winged teal and Gadwall during the July-August banding period.

Summary of Summer Banding
Prince Edward Island
1991

Species	Airboat	Base Stations	Total
Black Duck	206	255	461
Mallard	14	17	31
Hybrid (Bl X M)	1	1	2
Blue-winged Teal	211	104	315
Green-winged Teal	90	111	201
Ring-necked Duck	46	1	47
Pintail	8	-	8
American Wigeon	29	2	31
Shoveler	9	-	9
Wood Duck	26	9	35
Gadwall	16	-	16
Hooded Merganser	1	-	1
Total	657	500	1157

The Canada goose banding program continued during 1991 in cooperation with the Canadian Wildlife Service. A total of 331 geese were banded and neck collared to determine migration patterns and local movement. Banding occurred at a number of sites throughout the Province.

The banding program also includes activities related to migratory birds other than waterfowl. Two young ospreys were banded in a continuing effort to gain information on migration patterns and mortality factors for young fledged from Island nest sites. This brings the total number banded over the years to 327.

The breeding census of the woodcock, an important game bird species in eastern North America, is conducted annually throughout its range. Results of Prince Edward Island's survey indicated a decline in the breeding index by 20% in 1991.

Surveys of all cormorant colonies were conducted in 1991 in a continuing effort to monitor changes in the status of both species to determine future management needs.

Lead Shot Survey

A study to determine the quantity of lead shot deposited in wetlands in the Province and to assess the effect of spent shot on waterfowl commenced in 1988 and continued through 1991. Results of the initial study indicate significant quantities of lead shot occur in bottom sediments of two heavily hunted marshes near Charlottetown. Waterfowl gizzards collected from Pisquid Pond showed significantly high lead shot ingesting rates. This area will be designated a non-toxic shot zone in 1992. Early results indicated potential problems in heavily hunted marshes along the Hillsborough River and a large sample of gizzards was collected from cooperating hunters in this area during the fall of 1991. In addition, 123 ducks from the Hillsborough watershed were fluoroscoped (X-rayed) for ingested lead during 1991 summer waterfowl banding operations.

Furbearers

Branch staff continued to monitor, develop and improve the wild fur industry in the Province through trapper education, research and management. Total value of wild fur exported from the Province for the 1989-90 season again decreased sharply due mainly to the continual reduction in fur prices. See Table 3 for a summary of the annual harvest from 1979 - 1991.

1991 was the fifth year for mandatory education for all first-time trappers. Two courses for all of Prince Edward Island were conducted in 1991, with only thirty-two new trappers receiving certification. Courses are conducted jointly by the Prince Edward Island Trappers' Association and the Fish and Wildlife Branch. Extremely low pelt prices continue to result in reduced interest in trapping in 1991.

Although valuable for fur and, more importantly, for creating wetland habitat, beaver populations must be properly managed to prevent over population and subsequent damage to roads, woodlots and agricultural land. Information on sex, age and reproduction is collected annually for beavers harvested and used in conjunction with population indices and harvest figures to determine annual trapping seasons.

During the year, Fish and Wildlife personnel continued to co-operate with Department of Transportation and Public Works staff in the control of beavers at highway-stream intersections throughout the Province. In this regard, 1991 was a busy year with extra personnel employed until freeze-up in November.

TABLE 3. P.E.I. Wild Furs Exported and Total Value by Species, 1982 through 1991

SPECIES VALUE	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Beaver	289	378	476	485	538	538	397	325	342
(value)	(5,699)	(7,311)	(14,580)	(21,272)	(28,611)	(17,490)	(14,749)	(8,856)	(4,740)
Muskrat	8,527	9,886	8,964	7,269	6,083	5,712	7,101	4,968	2,205
(value)	(35,302)	(57,339)	(51,274)	(31,547)	(38,992)	(35,072)	(24,569)	(9,588)	(3,815)
Red Fox	995	994	1,104	892	939	722	752	508	544
(value)	(68,794)	(79,013)	(69,962)	(46,268)	(62,753)	(30,093)	(19,529)	(8,570)	(10,270)
Silver Fox	49	46	27	30	34	33	42	18	22
(value)	(6,891)	(6,785)	(4,730)	(3,351)	(4,766)	(3,953)	(2,954)	(743)	(248)
Cross Fox	119	85	85	46	61	34	59	23	28
(value)	(15,278)	(10,614)	(11,367)	(3,391)	(5,859)	(2,343)	(2,609)	(539)	(672)
Raccoon	1,336	1,119	1,405	1,284	1,473	1,510	403	181	65
(value)	(20,788)	(16,673)	(27,187)	(25,192)	(31,611)	(16,535)	(1,576)	(463)	(161)
Mink	635	718	1,147	866	865	809	573	442	265
(value)	(11,297)	(17,620)	(31,370)	(21,355)	(33,242)	(29,529)	(18,623)	(9,034)	(6,063)
Red Squirrel	63	210	84	57	74	32	41	18	5
(value)	(47)	(74)	(34)	(12)	(21)	(18)	(4)	(3)	(5)
Weasel	10	15	45	24	36	26	12	21	2
(value)	(11)	(24)	(79)	(27)	(51)	(11)	(8)	(12)	(5)
Skunk	—	—	—	—	—	2	1	—	—
(value)	(-)	(-)	(-)	(-)	(-)	(4)	(3)	(-)	(-)
Coyote	—	1	—	1	—	1	2	5	17
(value)	(-)	(35)	(-)	(30)	(-)	(35)	(50)	(75)	(238)
Total value* **	$164,107	$195,488	$210,583	$153,212	$202,227	$135,456	$85,574	$38,779	$26,253

* includes castoreum

** includes one otter at $35

Coyotes

Since the first coyote appeared in 1983 the population has expanded to many areas of Prince Edward Island. The Branch continues to work with the Department of Agriculture, P.E.I. Sheep Breeders Association and the Federation of Agriculture in dealing with problems associated with this species. A program to educate the general public in dealing with the species continues. The Branch continues to monitor the range expansion, reproduction and food habits of this species.

Firearm Safety Program

In 1991, 13 firearm safety courses were held. Seven of these were prehunting season, two were conducted in community schools and four were conducted as part of the high school curriculum. Three hundred and forty-one people enrolled in these courses; three hundred and twenty-seven successfully completed the course.

There were no recorded hunting accidents in 1991.

One training workshop was conducted in 1991 to update volunteer instructors on new approaches to firearm safety training. One pre-hunting season meeting was held to discuss upcoming courses in September.

To date, 6610 people have enrolled in the firearm safety course program with 6,263 successfully completing the course.

Licensing

Approximately 18,000 angling, hunting and trapping licenses are purchased annually. This figure does not represent the true participation of anglers and hunters due to a license exemption afforded resident commercial fishermen and their spouses, resident farmers and farm laborers and their spouses, and individuals under the age of sixteen years of age and those of aboriginal descent.

In 1991, Federal Migratory Bird Hunting Permits again were available to hunters through the Branch's hunting license vendors. Previously, these permits were available only through postal outlets in the Province. This new system has proven to be more convenient for the hunting public, as well as a benefit to license vendors. Vendors issued 2,644 of the over 5,000 permits issued annually in the Province.

PRINCE EDWARD ISLAND - CANADA
STATISTICS
ANGLING, HUNTING AND TRAPPING LICENSES

Season	Resident Angling	Non Res. Angling	Courtesy Res. Ang.	Salmon	Resident Hunting	Non Res. Hunting	(16 & over) Resident Trapping	(15 & under) Junior Trapping
1984	11,103	1,372	1,648	68	4,846	555	454	66
1985	10,740	1,341	1,649	117	4,477	575	361	99
1986	10,619	1,547	1,642	279	4,354	696	365	85
1987	9,674	1,272	1,638	461	4,000	908	342	48
1988	9,177	1,410	1,667	719	3,832	1,082	253	26
1989	9,804	1,427	1,650	646	3,623	1,258	169	18
1990	9,726	1,361	1,582	793	3,520	1,417	120	6
1991	9,648	1,154	1,680	480	3,015	940	N/A	N/A

Violation Summary for the Period 1986 - 1991 Inclusive

Enforcement in 1991 resulted in 77 violations being registered by enforcement staff under the various acts regulating the conservation and protection of fish and wildlife in the Province. A summary of violations for the past 5 years is presented below.

VIOLATIONS	1987	1988	1989	1990	1991
Fishing without a license	21	11	16	17	10
Fishing while suspended	1	-	-	-	1
Fishing out of season	1	-	10	14	9
Fishing with more than one line	3	1	-	4	11
Fishing in fishway	-	-	6	1	6
Untagged Salmon	-	1	2	-	-
Spearing Salmon	-	-	1	-	-
Using bait in fly fishing area	-	-	-	3	-
Jigging for sports fish	4	-	3	1	-
Illegal net	-	-	1	-	4
Hunting under age	-	-	-	-	2
Hunting without a prov. license	2	3	6	-	-
Hunting out of season	3	2	5	4	4
Hunting without a Federal Permit	5	2	10	1	5
Hunting while suspended	-	3	-	-	1
No firearm safety certificate	5	1	5	2	1
Use of live decoys	-	-	-	3	-
Hunting on Sunday	-	-	-	-	-
Hunting at night	-	-	-	3	-
Hunting in WMA	1	1	1	-	-
Loaded firearm in vehicle	1	1	2	1	1
Exceeding daily bag limit	3	1	5	3	4
Baiting of waterfowl	4	9	5	-	-
Hunting with more than 1 shotgun	-	-	-	-	1
Hunting with unplugged shotgun	2	1	-	1	-
Illegal possession migratory birds	-	-	-	1	1
Illegal possession protected species	-	-	1	-	-
Illegal transport of migratory birds	-	-	1	-	-
Selling game birds	-	-	1	-	-
Trapping without a license	1	-	-	-	-
Traps out after close of season	-	1	-	1	1
No fur dealers license	-	-	-	-	-
Trapping out of season	1	-	1	-	-
No tags on snares/traps	3	-	-	1	1
Illegal trap set	-	-	1	1	-
Trapping within 10 ft. of beaver house	2	-	-	-	-
Trapping within a Provincial Park	-	-	-	-	-
Failing to exhibit beaver carcass	-	-	-	-	-
No permit for green hide	-	2	-	-	-
Shipping fur without a permit	-	-	-	-	-
Trapping while suspended	-	-	-	1	-
Trespassing	-	2	3	1	-
Giving false information	5	3	5	2	6
Obstructing Conservation Officer	1	1	-	3	-
Assault Peace Officer	-	1	-	1	-
Pesticides too close to stream	-	7	2	2	-
Pesticides not contained on tanker	-	-	-	-	2
Sprayer in stream no one way valve	-	-	-	-	1
Neglect to produce license	-	-	-	3	-
Load not securely fastened	-	-	-	2	-
Impaired	-	-	-	1	-
Lobster out of season	-	-	-	2	-
Driving without due care	-	-	-	2	-

Feed game to foxes	-	-	-	1	-
Motor vehicle on sand dune	-	1	4	2	-
Motor vehicle on beach	-	-	-	-	3
Littering	-	-	4	1	2
Illegal excavation pit	2	-	-	0	-
Illegal sand removal	-	-	-	1	-
Sand dune alteration	2	-	1	1	-
No stream alteration permit	1	-	2	5	-
Off highway vehicle on highway	-	1	-	-	-
Off highway vehicle not registered	-	2	1	-	-
Carrying restricted weapon	-	1	-	-	-
Possession of narcotics	-	1	1	-	-
Illegal possession of liquor	-	-	1	-	-
TOTALS	71	60	106	93	77

WATER RESOURCES BRANCH

Introduction

Water Resources Branch is responsible for the management, protection and enhancement of the Province's groundwater, inland surface water and coastal water resources. The Branch also provides chemical and microbiological laboratory services to provincial government departments, municipalities and the public and manages programs related to shore zone sand mining.

Key areas requiring attention continue to be groundwater quality issues, groundwater protection and land use effects, environmental impact assessments, soil erosion and nutrient loss and its effect on streams and estuaries, and the need for well head protection in municipal water supplies.

In 1991, the Branch was reorganized to establish three areas of responsibility: Groundwater Protection Section responsible for groundwater quality problem investigations, underground tank management, and environmental emergency response; Resource Assessment Section, responsible for groundwater resource evaluation, water supply development and regulation, environmental assessments involving groundwater resources and groundwater programs under the Canada - P.E.I. Water Management Agreement; and Marine Environment Section, responsible for marine and estuary water quality investigations, watercourse alterations, sand mining regulation, environmental assessments involving the coastal zone or surface waters, and the Environmental Services Laboratory.

Resource Assessment Section

Water Well Program

Three additional areas have been identified for designation as "restricted areas" under the provisions of the Water Well Regulations. The areas are in the Town of Montague, and the Communities of Winsloe and Bedeque. In addition, the Section investigated complaints of wells being constructed by non-licensed well drillers.

During the months of June, July and August, a new P.C. based water well information system was developed in the Department. The new system, which replaces a main frame based system operated by the Computer Services Division, is now in operation and has greatly improved data input and retrieval efficiency. The system was developed by a student of Holland College through an "on the job training position" provided by the Computer Services Division.

Statistics related to the water drilling industry in the province for 1991 are summarized below:

Well Drilling Statistics

Well Drilling Licenses Issued	14
Well Exploration Permits	20
Restricted areas	9
Well Driller Reports Received	708
Abandoned Wells Reported	24
Abandoned Wells Plugged	43

Municipalities, consultants and private industries were given technical assistance and support for a number of water supply projects or investigations in 1991. Some of these activities include technical guidance provided to the Town of Summerside regarding reconstruction of a municipal well, and to the Community of North River and the Charlottetown Water Commission regarding expansion of water supply capacity.

Advice and technical assistance was also provided to proponents of a cranberry bog development in the Miscouche area and for the development of several proposed salt water wells for the fisheries and aquaculture sectors. The resource assessment section was involved in preliminary site assessment for a new landfill site in the East Prince County area.

Applications for subdivisions and industrial development proposals are reviewed by Water Resources Branch either as part of the subdivision approval process of Community and Cultural Affairs or as part of the Department of the Environment's environmental impact assessment process. These reviews include assessment of availability of suitable quality and quantity of water required by a proposed development, and assessment of potential impacts on groundwater, surface water and estuarine water resources.

A total of 57 subdivision applications were reviewed during the year. Six other water supply or development proposals were assessed with regard to their potential impact on groundwater resources.

Groundwater Quality Assessment Program

This program includes sampling of municipal water supplies, schools, hospitals, senior citizens housing, industrial supplies and campgrounds and parks for bacterial and chemical analyses. This includes over 200 locations across the province. Results are forwarded to the respective water supply owners with recommendations for corrective action where necessary.

Various monitoring programs for particular contaminants are also carried out. In 1991 these included continued work on a road salt monitoring program and a nitrate monitoring program.

Canada - P.E.I. Water/Economy Agreement

The two-year extension to the initial three-year Canada - P.E.I. Water Management Agreement, was in its second and final year with expiry on March 31, 1992.

Projects in progress or completed in 1991 are listed below:

Groundwater Program

- Preparation of final text and drafting for groundwater resource evaluations of 11 communities on P.E.I.
- Initiation of a groundwater resource evaluation for North River including consultation on the location of additional water supply wells for the community,
- A study of well field protection zone requirements, and associated elements of a project investigating economic aspects of water quality protection.
- Completion of a sampling program for selected pesticides in groundwater and initial assessment of the data.
- Completion of the third year of a survey of nitrate levels in groundwater in areas of different land use conditions, and preliminary evaluation of results. Conclusions based on the survey, and other work will be included in a discussion paper to be prepared in early 1992.

Surface Water Program

- Development of surface water use inventories in twelve watershed complexes as an aid to community groups and government agencies in planning watershed improvement projects.
- The development of a teacher's guide on surface water resource protection.

Estuary Program

- Evaluation of the estuary water quality and the impact of the Hillsborough Bridge on the Hillsborough River.
- Evaluation of estuary water quality for shellfish aquaculture in Eastern P.E.I. estuaries.
- Assessment of non-point sources of bacterial contamination in Southern Malpeque Bay.
- An assessment of the impact of the placement of a restrictive causeway in West River Estuary with a new wide span bridge.

Multi-Sectoral Program

- An extensive water resources information program including production of three water videos, a visual display on island water resources, and a number of information brochures.

Federal-Provincial Water Quantity Agreement

The Province and Environment Canada jointly operate a network of 9 permanent and several temporary stream gauging stations across the province. Information from these gauging stations is used to determine stream crossing requirements including bridge and culvert sizing, water allocations for irrigation or aquaculture purposes, water withdrawal impact assessments, and water budget purposes. As well the province operates 15 groundwater observation wells to monitor current and historical trends in groundwater levels.

In 1991 the province and Environment Canada continued work, begun the preceding year, on a review of all water related monitoring networks on P.E.I., including stream gauging stations, quality and quantity of precipitation, surface water quantity and groundwater and estuary resources. An integrated review of this nature has never before been carried out on Prince Edward Island. The resulting report, which will be completed in 1992, is expected to recommend substantial changes to existing water monitoring networks in the province.

Groundwater Protection Section

Groundwater Quality Investigations

Public demand for water well sampling continued at a very high rate in 1991. Major groundwater contamination investigations were carried out at Cornwall, North Rustico and Clyde River. All these situations involved bacterial contamination of groundwater.

An extensive groundwater quality survey was conducted in Montague in 1991. Chemical analysis of drinking water from over one hundred (100) locations within the town provided the basis for a report which recommended that the town consider developing a municipal water system. While the survey revealed that the majority of locations sampled had water quality acceptable according to the Canadian Drinking Water Quality Guidelines, sixty five (65%) percent of the locations showed signs of gradual water quality deterioration.

Investigations involving petroleum contamination of groundwater will be discussed in a later section. A summary of all groundwater sampling activities carried out within the Water Resources Branch is given below.

Samples Collected

	1990	1991
Bacterial Analyses	5624	4494
Routine Chemistry Analyses	2382	1513
Water Quality Certificates (Mortgages)	947	985
Detailed Chemical Analyses	1250	1122
Pesticides Analyses	318	168
Hydrocarbon Analyses	161	146
Dept. of Health Referrals	32	16

The major sources of groundwater contamination continue to be coliform bacteria, nitrates, petroleum, chlorides, iron and manganese. Following is a partial list of typical groundwater contamination investigations carried out in 1991.

Groundwater Contamination Investigations

Cape Egmont - One well with high concentrations of iron and manganese resulting in a strong odor; new well drilled; situation improved;

North River - (Candlelight Park) continued with sampling program from 1990;

Spring Valley - Well supplying egg grading facility at poultry farm contaminated with iron and manganese; new well drilled per our recommendation; problem solved;

York Point - Three wells contaminated with salt water intrusion; new specially designed wells drilled (plastic casing with gravel packed screens) to obtain potable water;

Clyde River - Eight wells contaminated with bacteria (faecal); shallow overburden resulting in insufficient filtration of surface water and septic system effluent; one well replaced; UV lights installed on several others;

Stanley Bridge - Salt water intrusion; technical assistance provided to homeowner in helping to obtain fresh water; four separate wells drilled on property; fresh water still not obtained;

Cardigan - Problem with iron, manganese and road salt in one well; investigation continued from 1990; unresolved;

Fortune - One well developed taste and odour similar to rotten potatoes; cull potatoes dumped in gravel pit nearby was the suspected source;

Desable - Wells at two adjacent restaurants were contaminated with bacteria (faecal); UV lights were installed; source unconfirmed;

Montague - A new well drilled last year because of petroleum contamination in previous well also developed petroleum odour; well construction technique was questionable; well was abandoned and a second well constructed;

Montague - Road salt contamination from parking lot run-off; one well reconstructed;

Montague - Two wells contaminated with road salt; new wells drilled;

West Royalty - One well supplying apartment building contaminated with iron and manganese; new well drilled; problem solved;

Murray Harbour - Complaints about dirty water from the tenants at a senior citizens complex resulted in a new well being drilled; problem solved;

Cornwall - A major investigation found bacteria contamination due to broken sewer lines; the village extended their water system to include the affected area; repairs also made to the damaged sewer lines;

North Rustico - A major investigation resulted from the discovery of several wells grossly contaminated with bacteria (faecal); broken sewer lines identified and replaced; affected area now serviced by central water;

High Bank - One well contaminated with bacteria (faecal); source unconfirmed after investigation; recommend well reconstruction;

Southport - Well drilled to correct salt water intrusion problem; encountered iron and manganese problems; recommended treating water since well reconstruction may cause salt to return;

Mt. Vernon - One well contaminated with bacteria (faecal); new septic system installed; water problem cleared up;

Southport - One well contaminated with bacteria (faecal); source unknown; well reconstructed; problem cleared up;

Little Pond - Well at community center contaminated with bacteria; source unknown; bacteria within acceptable levels; recommended boiling water and monitoring;

Richmond - One well contaminated with bacteria; repairs to septic system were made; problem cleared up;

Albany - One well contaminated with bacteria; pitless adapter and additional casing recommended;

Albany - One well contaminated with high chlorides; new well drilled; problem solved;

New Glasgow - Four wells contaminated with bacteria; most likely barnyard and surface run-off; two separate sources; two new wells drilled; problem went away in other wells;

Cavendish - One well contaminated with bacteria at tourist establishment; possible source, leakage from swimming pool; U/V light installed;

Johnstons River - One well (old hand dug) contaminated with bacteria and iron; new well drilled; problem cleared up;

Keppoch - One well contaminated with bacteria and sediment; new well drilled; problem cleared up;

Bonshaw - Two wells contaminated with bacteria; probable source barnyard and surface run-off; wells were interconnected; mixing was discontinued; wells were chlorinated; one well cleared up;

West Royalty - One well with sediment problem; suspected source, surface water drainage from nearby shale pit;

Abrams Village - Nitrates survey carried out in response to individual homeowners concern about nitrates and pesticides; twenty-two wells surveyed; two showed high nitrates.

Water Well Regulation Investigations

The Groundwater Protection Section actively enforces the Water Well Regulations, particularly as they pertain to well construction. Summaries of major investigations in 1991 are given below.

Cambridge - Investigation of an improperly constructed well (well buried, no adapter); owner advised of infraction and corrections were made;

Brooklyn - New home built over existing well; letter sent to homeowner informing him of the infraction;

Tignish - Unlicensed well driller; informed to discontinue operations;

West Point - Homeowner drilling own well for use at a cottage; informed of the regulations and instructed to discontinue drilling;

Palmer Road North - New construction; well (casing) was cut off and buried; corrections made to comply with regulations;

St. Edward - New well; casing cut off below ground level; corrections made to comply with regulations;

Montrose - New well; casing cut off below ground level; corrections made to comply with regulations.

Petroleum Storage Tank Program

This program is presently in its 6th year of operation. As in previous years, the main focus of the program was removal of unprotected steel tanks 15 years of age or older. Two-hundred and thirteen tanks were removed in 1991 bringing to 1,756 the total number of tanks removed since the initiation of the program. Twenty-nine percent of tanks removed in 1991 were classed as leakers, and extensive clean-ups were often required. Table 1 gives a summary of activities within the Petroleum Storage Tank Program for 1991.

Table 1
Underground Petroleum Tank Program

Underground Tanks Registered	1890
New Underground Tanks Installations Inspected	44
Underground Tank Removals Inspected	213
Leaking Underground Tank Removed	62
Inventory Record Inspections	168
Licensed Level I Contractors	30
Licensed Level II Contractors	11
Summary Offense Tickets Issued/Convicted	5/5
Failure to Maintain Inventory Records	1
Alteration by Unregistered Installers	1
Delivery to Unregistered Tank	1
Failure to Notify of a Spill	2
Ministerial Orders Issued	10

A questionnaire survey concerning domestic wells and aboveground home-heating fuel tanks was conducted for Montague, Winsloe, and Alberton in 1991. The purpose of the survey was to obtain well information and assess the potential for groundwater contamination due to spills from aboveground home-heating fuel tanks.

Staff of the Petroleum Storage Tank Program also serve on the Environmental Emergency Response Team for the

province. Staff responded to 318 spills, primarily involving petroleum products during the year. Each spill requires at least one site visit and often substantial follow-up investigation. Summaries of major spills investigated in 1991 are given below.

Winsloe - A leaking underground pipeline resulted in three wells being contaminated. Contaminated soil was removed from the site. Further clean-up is on-going with a vapour extraction system remediating contaminated bedrock and a pump and treat system remediating contaminated groundwater.

Commercial Cross - A spill of 1000 liters of gasoline during delivery resulted in groundwater contamination. Site clean-up is on-going with a vapour extraction system remediating contaminated soil and a pump and treat system remediating contaminated groundwater.

Covehead - A leaking underground gasoline storage tank system resulted in groundwater contamination. Contaminated soil was removed under the tanks and piping. Further clean-up is on-going with a vapour extraction system remediating contaminated bedrock and a pump and treat system remediating contaminated groundwater.

Summerside - Leaking underground gasoline storage tanks systems at two different sites resulted in major clean-ups being required. Contaminated soil was removed at both sites. At one site groundwater contamination was identified and as a result a nearby municipal well was shut down. Clean-up is on-going with a pump and treat system remediating contaminated groundwater.

Wood Islands - Leaking underground pipelines resulted in a major clean-up being required. Contaminated soil was removed to the bedrock. Further environmental assessment is on-going to determine the extent of the problem.

Clyde River - Leaking underground pipeline resulted in a major clean-up being required. Contaminated soil was removed to the groundwater.

Charlottetown - Major clean-ups were started at two sites. 1) At a service station, 2800 liters of gasoline was recovered from the groundwater. An environmental assessment is on-going to determine the source of the contamination. 2) A major soil remediation is on-going at a bulk plant closure. Spillage over the years was the cause of the contamination.

Hunter River - Leaking underground pipeline resulted in a major clean-up being required. Contaminated soil was removed and a bentonite seal installed over the spill area.

Tignish - A major clean-up occurred at a bulk plant site closure. Spillage over the years was the cause of the problem. Extensive removal of contaminated soil was involved.

St. Eleanors - Leaking underground pipelines resulted in a major clean-up being required. Groundwater contamination was identified and as a result a nearby municipal well was shut down. Clean-up is ongoing with a pump and treat system remediating contaminated groundwater.

Springhill - A leaking underground tank and pipeline resulted in a major clean-up being required. Contaminated soil was removed to the bedrock. Further environmental assessment is on-going to determine the extent of the damage.

Vernon Bridge - Leaking underground pipelines resulted in a major clean-up being required. Contaminated soil was removed. Further environmental assessment is on-going to determine the extent of the problem.

St. Peter - St. Paul - A leak of approximately 4500 liters of gasoline from a leaking aboveground pipeline resulted in a major clean-up being required. Contaminated soil was removed to the bedrock. Clean-up is continuing with a vapour extraction system remediating contaminated bedrock and a pump and treat system remediating contaminated groundwater.

Crapaud - A major clean-up occurred at an abandoned bulk plant site. Spillage over the years was the cause of the contamination. Extensive removal of contaminated soil was involved.

Baltic - A leaking underground gasoline tank and pipeline resulted in a major clean-up being required. Contaminated soil was removed to the bedrock. Further environmental assessment is on-going to determine the extent of the problem.

Marine Environment Section

Canada - P.E.I. Water Quality Agreement

In October of 1989, Federal and Provincial Ministers of the Environment entered into an agreement to expend $180,000 per year, cost-shared 2/3 Federal, 1/3 Provincial, on water quality assessment. The objective of the Agreement is to operate a water quality assessment network in the province which will obtain scientific data on water quality, assess the state of water quality, and detect and measure changes in water quality which could inhibit the use of that water. The network plan includes groundwater, inland surface water and estuaries. P.E.I. is

the first province to obtain federal concurrence to include groundwater and estuary stations in their network. The index network on P.E.I. consists of 46 sampling stations in 10 major watersheds across the province. Most of the sampling sites were identified in 1991. Remaining sites will be identified in 1992. Field sampling of the index network of stations began in December 1991 across the Island at 29 sites. Expansion of the program will occur early in 1992. It is expected that the sampling runs will be completed every six weeks.

In addition to the index network, the Agreement also provides for the establishment of temporary, smaller recurrent surveys that can address intensive sampling needs. In 1992, a small survey of the three index estuaries sampled nine sites for sediment and mussels. The sediments and mussels will be analyzed in 1992 for PAHs and grain size.

Estuary Water Quality Program

The Marine Environment Section carried out a number of estuary water quality investigations in 1991 both through the use of consultants and in-house staff. Descriptions of major investigations follow.

West River

In August of 1987 a new wide span bridge structure became operational in the New Dominion Causeway across the West River Estuary. Although substantial improvements in water quality were immediately evident, a comprehensive assessment of those changes were undertaken. Using water quality information generated by the Section, a contract was let to P. Lane & Associates Ltd. to provide the Department with a scientific evaluation of the resulting changes in the hydrodynamics, water and environmental quality of that system.

The final report was completed in 1991 and copies are available to interested parties. It is anticipated that the information generated from this work will be beneficial in evaluating the effectiveness of similar modifications to other causeway impounded estuaries on P.E.I.

Barbara Weit River

In response to recommendations contained in a study entitled "Barbara Weit Estuary, Pollution Alleviation Study" submitted to the Department in 1988, a water quality monitoring program was undertaken in that system and carried through the spring, summer and fall months of 1989, 1990 and 1991. The initial objective of this project was to evaluate water quality changes as a result of improved treatment of waste water generated by the Cavendish Farms Potato Processing Plant. In early 1990 a major expansion of the processing plant was proposed and was subsequently considered under the Department's Environmental Impact Assessment process. In order to comply with information requirements under that process a comprehensive impact statement on the various environmental aspects was required. The marine and fresh water quality data generated by this project has become the basis for the evaluation of waste treatment requirements, effluent location and projected environmental impacts.

As part of the overall assessment of environmental conditions in the estuary a sediment coring program was undertaken by this Section during the winter of 1990. The surface of the bottom was found to be a gelatinous muck insitu that dries to a peat-like consistency. The estimated volume was 79821 m3. This highly organic material had concentrations of compounds that would suggest that land spreading may be feasible although the usefulness as a fertilizer may be limited. It would appear that this is the result of many years of accumulation of organic waste from the potato processing plant.

Hillsborough River

The Hillsborough River is one of the most productive oyster growing areas in the Province. In response to concerns raised in a submission to the Department by the Queens County Shellfish Association regarding water quality and other environmental conditions in the estuary a water quality monitoring program was initiated in 1989 and carried through to the fall of 1991. It is perceived by the fishermen that there has been a gradual deterioration in the quality of the water and sediments particularly during the summer months when there is some evidence of seasonal eutrophication. There is also serious suspicion on behalf of many fishermen that the Hillsborough Causeway may be at least in part responsible for the alleged decline in shellfish productivity.

The contract for the interpretation of the three years of physical, chemical and biological data was awarded in 1991. This contract is being funded under the Estuary Section of the Canada/P.E.I. Water Management Agreement. During the summer of 1991, with the guidance of the consultant, the Section completed a benthic survey of the estuary from the Hillsborough Bridge to Mount Stewart. The consultant and the section cooperatively completed a bathymetric survey of the estuary. A final report is expected in early 1992.

North River

Seasonal eutrophication and anoxic conditions were again prevalent in the section of the North River estuary

upstream of the causeway. At the request of the Department of Transportation & Public Works, a terms of reference was prepared by the Branch in 1990 for a study to evaluate the various options to improve the currently unsatisfactory conditions in that system. The Department of Transportation & Public Works awarded a contract in 1991 to a consultant to assess the alternatives of converting the system to a totally freshwater environment and the restoration of full tidal exchange through the installation of a span bridge. The consultant conducted a public meeting to outline their results. The consultant recommended the construction of a span structure in the causeway at the site of the original channel to restore the natural tidal amplitude.

Glenfinnan - O'Keefes Lakes Monitoring Program

Regular monitoring of Glenfinnan and O'Keefes Lakes has been ongoing for a number of years. The principle objective of the monitoring is to evaluate the long-term benefits of the addition of agricultural limestone to the lake water in terms of maintaining pH levels within an acceptable range. Lime was last applied to O'Keefes Lake in the fall of 1987 and the monitoring information has indicated that further application is not yet necessary.

Shellfish Growing Area Surveillance Program

The Federal/Provincial Cooperative Shellfish Growing Area Surveillance Program was active during the summer and fall of 1991. There are two types of water quality surveys carried out in shellfish growing areas under this program. Reappraisal surveys of open growing areas involve five sampling runs at permanently established stations. The purpose of this type of survey is to assure compliance with the criteria for an open area on an annual basis and to detect any deterioration in water quality that could occur due to new or existing point or non-point sources of pollution. A comprehensive study on the other hand involves a detailed assessment of the water quality of an entire basin or river system. The objective of this type of survey is to properly locate or in some cases re-locate growing area closure lines. Comprehensive surveys require a minimum of fifteen sampling runs at a predetermined number of sampling stations.

During 1991, forty-eight areas were subject to reappraisal surveys while two areas were subject to comprehensive assessment. The work of two field crews and one laboratory person involved the collection and microbiological analysis of 3,636 samples.

The shellfish growing area program is jointly sponsored by Environment Canada and this Department. Salaries, materials, supplies and travel are funded by the Federal government, while the day to day supervision, laboratory facilities, field sampling equipment and data management are covered by the province.

Shore Zone Sand Removal Program

The removal of sand from the shore zone is controlled by the Sand Removal from Beaches Regulations made pursuant to the Environmental Protection Act. The extraction of sand from Prince Edward Island beaches for use in the commercial manufacture of concrete showed a slight decline as compared to the previous year.

During the year a total of 34 permits were issued at 18 different removal locations throughout the province. The calculated quantity extracted was 39,000 cubic meters as compared with 43,600 cubic metres for the previous year.

It was a relatively quiet year in terms of public disagreement with the Department's sand removal policy with no major complaints received. Sand removal sites generally are considered to be in very good condition with no notable impact of the closely supervised sand removal activity. The only exception would be at the Murray Harbour North site where, because of the removal of the old wharf structure, there has been a significant re-adjustment in the shoreline alignment over the past three years. This re-adjustment is not considered to be the result of sand removal activity. There were no prosecutions involving the removal of sand from beaches during the year.

Watercourse Alteration Program

The Marine Section is responsible for the administration of Section 10 of the Environmental Protection Act. This Section provides the legislative authority to protect and control any type of alteration in the provinces watercourses and wetlands. Before undertaking an alteration of any kind the proponent is required to obtain a watercourse alteration permit.

During the year a total of 484 applications were reviewed. This number represents an 83% increase over 1990.

All watercourse and wetland alteration applications are referred to the Watercourse Alteration Advisory Committee formally established by the Minister to assess such alterations.

During the year, twenty (20) potential violations were investigated of which three (3) were successfully prosecuted. Two (2) others are still under investigation. Also, two (2) restoration orders have been issued in connection with the above-mentioned incidents. The Department has

undertaken a campaign to better inform contractors and the general public as to the requirements of the Act in relation to watercourse and wetland alterations.

Shoreline Erosion

Staff were active during the year in a number of aspects related to shoreline erosion. A number of shorefront erosion problems were investigated at the request of property owners.

Several of the sixty (60) Island-wide erosion monitoring stations were measured in order to update records.

Environmental Services Laboratory

The Environmental Services Laboratory operated by this Section deals primarily with the chemical and microbiological analyses of water, wastewater and food products. All microbiology and some partial chemistry work is carried out at facilities located on the 5th floor of the Sullivan Building while the water chemistry analysis is conducted by the Dept. of the Environment personnel at the Provincial Department of Agriculture Laboratory.

The following table provides a summary of the number of analyses carried out of each parameter or group of parameters.

Laboratory	Type of Analysis	Number of Analyses
Environmental Services Lab	Water (microbiology)	
	- coliform, filtrations	8153
	- faecal coliform, filtrations	3232
	- coliform, multi tube	145
	- faecal coliform - multi tube	925
	- pseudamonas	146
	- staph aureus	13
	- faecal streptococci	13
	- salmonella	16
	- misc	4
	- faecal coliform - A-1 method	3,750
	Total	16,397
	Water (Chemistry)	
	-chem. indicator parameters (TDS, Fe, Chlorides, NO_3, etc.)	8,960
	Food (microbiology)	
	- coliform	194
	- aerobic colony count	198
	- staph aureus	75
	- salmonella	73
	- pH	270
	- E. coli (direct plating)	22
	Total	1,182
	Dairy Products (microbiology)	
	- aerobic colony count	145
	- yeast & mold (butter)	146
	Total	291
	Environmental swabs	386

	Wastewater(BOD,SS,dye Tracers)	3,024
	Marine waters (chlorophyll, pheophytin, org./inorg. C)	7,640
	Total Environmental Services Lab	37,880
Agriculture Lab	Water Chemistry	
	- major ions (Na,Ca,Mg,K, Cl, SO_4,T. Alk)	11,763
	- heavy metals (Cu,Pb,Zn,Cd, Ni, Cr)	9,204
	- trace metals (Mn,Fe,ext & dis)	3,468
	- nutrient parameters (total & inorg. P, NO_3-N, NH_4, Si)	7,311
	- other (conductivity, pH)	1,288
	Total	33,034

The total number of analyses at the Environmental Services Laboratory increased by 10% from 1990. At the Agriculture Laboratory, a new in-house quality control program was developed and implemented.

Other Activities

The Marine Section is responsible for the administration of Section 22 and 23 of the Environmental Protection Act which deals with protection of sand dunes and beaches. Emphasis of the legislation is directed at controlling activities such as motor vehicles on sand dunes and beaches and destruction of cover vegetation. There were no prosecutions under Sections 22 and 23 during the year.

Fifteen (15) dredge spoil disposal applications were reviewed as part of the Ocean Dumping Control Act referral process. A number of inland disposal applications were also dealt with by this Section. Several on-site inspections were carried out with Public Works Canada.

Several meetings of the Atlantic Shellfish Growing Area Classification Committee were attended and several meetings of the P.E.I. Working Group on Shellfish were held during the year to deal with matters related to the surveillance and classification of shellfish growing areas.

Staff of the Section were actively involved in the administration and supervision of projects under the Canada/P.E.I. Water/Economy Agreement.

EMERGENCY MEASURES ORGANIZATION

The Emergency Measures Organization is responsible for the development and co-ordination of an overall provincial program of preparedness for the response to emergencies and disasters.

The Branch provides planning, training and advisory services for both provincial and local government authorities and industry. It actively participates when an emergency or disaster situation develops beyond the capacity of the local government, and administers special assistance programs authorized by the Government of Prince Edward Island following emergencies and disasters.

Branch staff are specially qualified and experienced in preparing plans and procedures, coordinating resources and providing advice on problems of emergency evacuation, welfare, health and rehabilitation. Specialists from other government departments provide resource advice and assistance when required.

JOINT EMERGENCY PREPAREDNESS PROGRAM (JEPP)

Funded at approximately $ 6.5 million annually, the Joint Emergency Preparedness Program (JEPP) represents 35% of Emergency Preparedness Canada's (EPC) annual budget and allows the Government of Canada, in consultation and co-operation with Provincial and Territorial Governments, to contribute to provincial and municipal projects that enhance the national capacity to respond to emergencies.

Projects submitted by the provincial and territorial response organizations are evaluated by EPC Regional Directors and senior managers according to established criteria. The financial contribution of the Federal Government is negotiated separately for each project. When approved, the funds are made available once the agreed conditions are met.

As in the past, activities favor the development and evaluation of emergency plans, training programs and response equipment.

Through the assistance of JEPP, Emergency Measures Organization promoted the following projects in the past year:

JEPP # 9-5 ($103,500)	Basic Ongoing Prince Edward Island Emergency Measures Organization (Peace & War) 5 Year Agreement and Readiness Plan.
JEPP # 13-5 ($ 37,000)	P.E.I. National Emergency Arrangements Management Plan. Cost-shared between the Federal/Provincial Government.
JEPP # 26 ($ 31,487)	New London Mutual Aid Area Emergency Equipment. Cost-shared between the Federal Government and the New London Mutual Aid Area.
JEPP # 28 ($ 88,929)	Summerside Mutual Aid Emergency Response Vehicle. Cost-shared between the Federal Government and the Summerside Mutual Area.

EMERGENCY RESPONSE VEHICLES

The Mutual Aid Area of Summerside have completed their project for a new Emergency Response Vehicle equipped with life saving and specialized equipment to respond to chemical/hazardous goods incidents.

The New London Mutual Aid Area have completed their project for life saving and specialized equipment to respond to chemical/hazardous goods incidents.

EXERCISES

An exercise involving a simulated explosion with casualties was held at a school in the Souris area in order to test the operational procedures of all emergency response agencies that would normally respond to such an emergency or disaster . At the same time the internal emergency plan of the Souris Hospital was also exercised.

An evacuation exercise was held with the Colville Manor in Souris to test their emergency plan and the procedures of other emergency response agencies.

Once again, we received excellent response and co-operation from our volunteers who staff our Provincial Emergency Plan, as well as that of the volunteers involved in Municipal Emergency Plans.

Other exercises held include:

- 1 Island-wide exercise involving key personnel who are involved with our Provincial Emergency Plan.
- 5 Regional EOC table-top exercises; one for each of the five regions, O'Leary, Summerside, Charlottetown, Montague and Souris.
- 1 Municipal table-top exercise in Cornwall.
- 1 Municipal table-top exercise in Crapaud.

MUNICIPAL EMERGENCY PLANNING

During the past year, meetings were held with 31 municipalities/communities to discuss and upgrade emergency planning in Prince Edward Island. To date 49 municipalities/communities have emergency plans in place. Planning for emergencies, whether natural or man-made, is the responsibility of all authorities who are involved with public safety.

TRAINING

Approximately 55 EMO volunteers and emergency response personnel received formal training at the Canadian Emergency Preparedness College, Arnprior, Ontario during the past year. Listed below are a few of the specialized courses offered at the college:

- Plans and Operations Peace
- Emergency Operations Course
- Emergency Site Management
- Exercise Design Course
- Mayors and Elected Municipal Officials
- Health and Social Services

Other specialized courses and workshops are offered at the college throughout the year. Anyone requesting information on these or any of the other courses offered, please contact this office.

PUBLIC AWARENESS

Once again this year EMO has been offering to the various schools across the province a program consisting of a 30-minute video drama with discussions on emergency preparedness.

The material provides opportunities for students to examine the effects of emergency situations on people before, during and after an emergency. They explore the natural and man-made disasters which can result in loss of life and property. The students are made aware that although most emergencies cannot be fully controlled, their disastrous effects can be lessened through effective planning and preparation.

GROUND SEARCH AND RESCUE

All appropriate agencies agreed to the formation of a Provincial Ground Search and Rescue team. This team is expected to be operationally capable this year.

COMMITTEE OF ATLANTIC EMERGENCY MEASURES ORGANIZATION DIRECTORS

The committee of Maritime EMO Directors continue their work. They are scheduled to meet quarterly to discuss items of mutual and common interest in the Maritime region.

EMERGENCY PLANS

The P.E.I. Provincial Emergency Plan was re-written and issued as a new document. Six of the Provincial Departmental Plans were updated. The majority of the specific emergency plans were updated and re-issued.

NATIONAL EMERGENCY AGENCIES (NEA)

The Province continued to work with Federal departments on writing the provincial component plan of several NEA's.

MEDICAL EMERGENCY RESPONSE TEAM

This team was officially made a responsibility of the St. John Ambulance Inc.

EMERGENCY TRANSPORTATION TEAM (ETT)

Plans are underway for the formation of an Emergency Transportation Team comprised of snowmobiles, four wheel drives and all terrain vehicles. The purpose of this team is to provide essential transportation services to residents in the event of a emergency/disaster e.g. snow storm, where no other means of transportation is feasible.